
शटलकॉक — विशिष्टि

(चौथा पुनरीक्षण)

Shuttlecocks — Specification

(Fourth Revision)

ICS 97.220.30

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FOREWORD

This Indian Standard (Fourth Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Sports Goods Sectional Committee had been approved by the Production and General Engineering Division Council.

Shuttlecock is a sports equipment, which is used for playing badminton games. The shuttlecock is thrown on the opponent's half of the field through the use of a badminton racket. A shuttlecock consists of a head and a tail. The tail of a shuttlecock is formed by 16 overlapping feathers or synthetic materials, which are inserted into the head and secured with thread.

This standard was first published in 1953 and subsequently revised in 1963, 1978, and 2002. In the third revision, a provision was made to allow the use of synthetic materials besides natural feathers namely white duck straight feather or white goose straight feather. In this revision, the following major changes have been made:

- a) Two different grades of shuttlecock are incorporated based on their uses;
- b) Material specification has been updated; and
- c) Dimension and weight requirements have been updated.

The composition of the Committee, responsible for the formulation of this standard is given at Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

SHUTTLECOCKS — SPECIFICATION

(*Fourth Revision*)

1 SCOPE

This standard covers the requirements for shuttlecocks used in playing badminton.

2 REFERENCE

The standards listed below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed in listed below:

<i>IS No.</i>	<i>Title</i>
2500 (Part 1) : 2000	Sampling procedure for inspection by attributes, Part 1 sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection (<i>third revision</i>)
4905 : 2015	Random sampling and randomization procedures (<i>first revision</i>)

3 CLASSIFICATION

The shuttlecocks are classified as follows based on their uses:

- a) Grade 1 — It is recommended to be used for the competition level.
- b) Grade 2 — It is recommended to be used for recreation, practice, training, intermediate and other playing levels.

4 MATERIAL

Any suitable material, whether natural feathers or synthetic materials, can be used to manufacture shuttlecocks provided the product shall meet the requirements given in 5 and 6.

NOTE — The skirt, or simulation of feathers in synthetic materials, the flight characteristics generally should be similar to those produced by a natural feathered shuttlecock.

5 REQUIREMENTS

5.1 Dimension

For grade 1 shuttlecock, the dimension shall be as shown in Fig. 1, and for grade 2 shuttlecock, it shall be as shown in Fig. 2.

5.2 Weight

The shuttlecock shall weigh as given below:

	<i>Weight, in g, Min</i>	<i>Weight, in g, Max</i>
Grade 1	4.74	5.50
Grade 2	3.47	5.98

6 CONSTRUCTION AND WORKMANSHIP

6.1 For Grade 1 Shuttlecocks

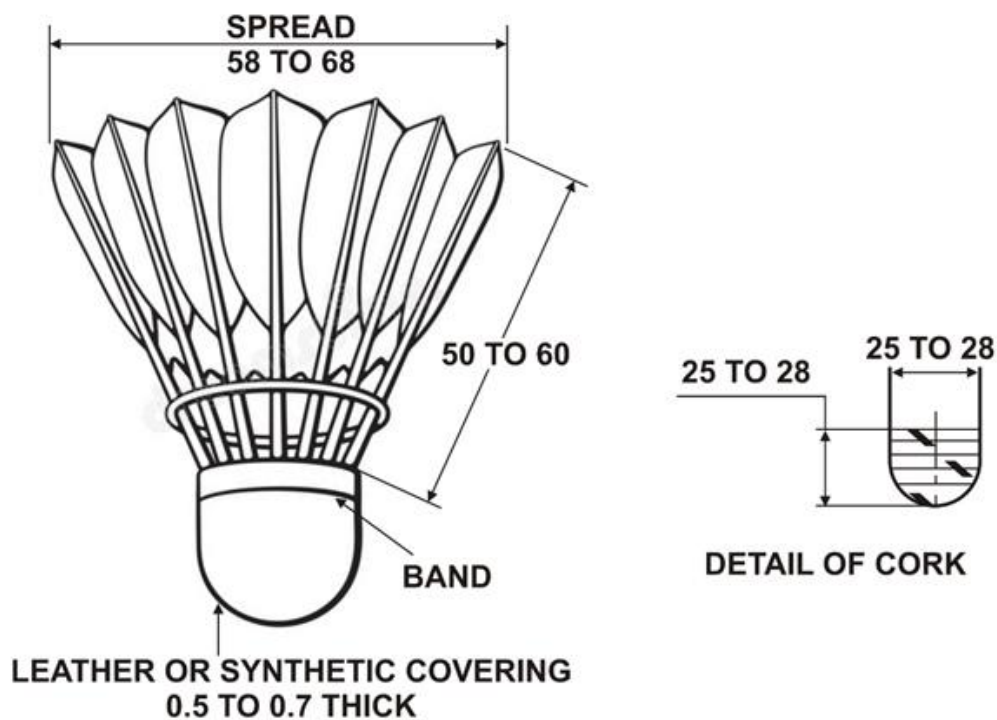
6.1.1 The cork body shall be cylindrical in shape with the hemispherical base (cork) at the striking end as shown in Fig. 1. The base shall have 16 holes suitably bored into its flat face to a minimum depth of 12 mm for fixing the feathers. Before boring, the top of the cork shall be faced with textile fabric or other suitable material or without any material.

6.1.2 These shuttlecocks shall have 16 feathers glued into the holes of the cork with synthetic adhesive. Individual feathers in a given shuttlecock shall be of the same exposed length as given below:

- a) Overall length of the feather shall be 62 mm to 70 mm;
- b) Length outside the cork shall be 50 mm to 60 mm; and
- c) Feather inside the cock shall be minimum of 11 mm.

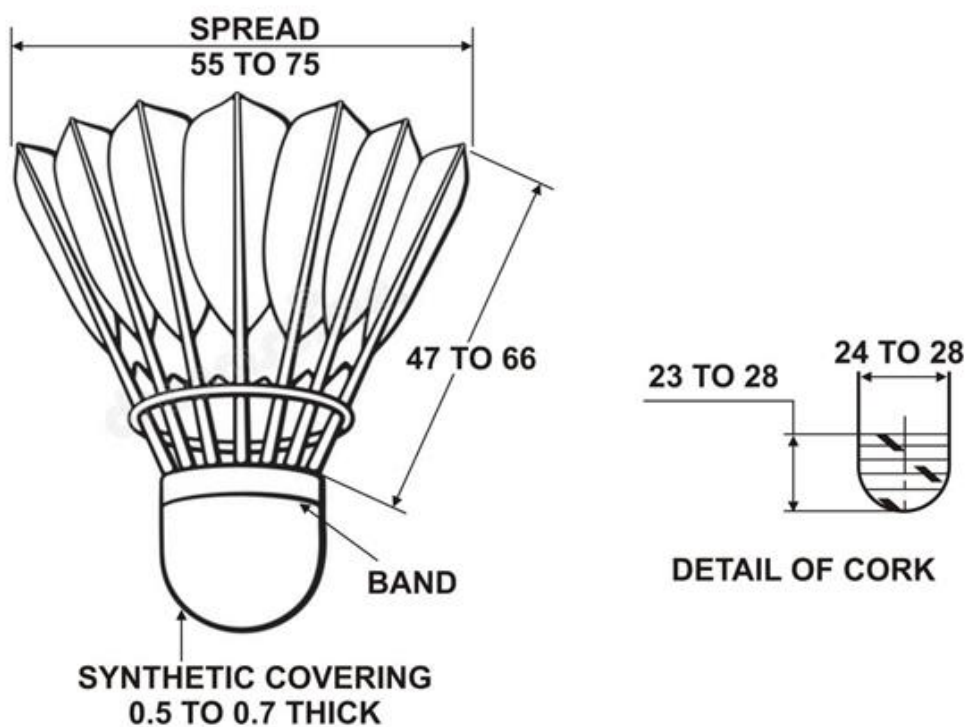
6.1.3 The feathers in shuttlecock shall be fastened firmly with thread or other suitable material and have at least one binding preferably at the center of the feathers.

6.1.4 The base covering shall be glued to the surface of the cork. A band shall be glued with synthetic adhesive to cover the edges of the base covering at the top of the cork. The bare portion of the cork under the band shall not be more than 2 mm.



(All Dimensions are in millimeters)

FIG. 1 SHUTTLECOCK (GRADE 1)



(All Dimensions are in millimeters)

FIG. 2 SHUTTLECOCK (GRADE 2)

6.1.5 The spread of the feathers of the shuttlecock shall be circular and evenly placed. The tips of feathers shall lie on a circle with a diameter from 58 mm to 68 mm.

6.1.6 The diameter of the base shall be from 25 mm to 28 mm and rounded on the bottom as shown in Fig. 1.

6.2. For Grade 2 Shuttlecocks

6.2.1 The cork shall be made of cork wood material, EVA material, or combination of EVA material and cork granules material body. It shall be cylindrical in shape with a hemispheric base at the striking end as shown in Fig. 2. It shall have 16 holes or 1 hole suitably bored into its flat face to a minimum depth of 9 mm for fixing the feathers or synthetic skirt.

6.2.2 The shuttlecocks shall have 16 feathers or synthetic skirts glued into the holes/hole of the cork with synthetic adhesive. Individual feathers or synthetic skirt in a given shuttlecock shall be of the same exposed length as given below:

- a) Overall length of the feathers/synthetic skirt shall be 56 mm to 75 mm;
- b) Length outside the cork shall be 47 mm to 66 mm; and
- c) Feather inside the cork shall be a minimum of 9 mm.

6.2.3 The shuttlecock, if made with feathers shall be fastened firmly with thread or other suitable material and have at least one binding preferably at the center of the feathers.

6.2.4 The base covering shall be glued to the surface of the cork. The band shall be glued to the synthetic adhesive to cover the edges of the base covering at the top of the cork. Bare portion of the cork under the band shall not be more than 3 mm.

6.2.5 The spread of the feathers or synthetic skirt of the shuttlecock shall be circular and evenly placed. The tips of feathers or synthetic skirt shall lie on a circle with a diameter from 55 mm to 75 mm.

6.2.6 The base shall be 24 mm to 28 mm in diameter and rounded on the bottom.

7 SAMPLING

7.1 Unless otherwise agreed to between the purchaser and the supplier, the sampling procedure given in IS 2500 (Part 1) shall be followed.

7.2 Lot

In any consignment, all the cylindrical boxes containing shuttlecocks of the same type, grade, and range of mass, manufactured from identical materials under similar conditions shall be grouped together to constitute a lot.

7.3 The inspection level and AQL to be followed for various requirements are given in 7.3.1 to 7.3.3.

7.3.1 For visual and dimensional requirements, a single sampling plan with inspection level III and AQL 2.5 percent given in Tables 1 and 2 of IS 2500 (Part 1) shall be followed.

7.3.2 For the requirement of pace and flight, at least 10 percent of the cylindrical boxes with a minimum of 2 shall be selected and an approximately equal number of shuttlecocks shall be taken from each selected box. The boxes from the lot and shuttlecocks shall be selected at random. In order to ensure the randomness of the selection, the procedures are given in IS 4905 may be followed. The lot shall be considered conforming to the requirements of this specification if all the shuttlecocks in the sub-sample meet this requirement.

7.3.3 For the requirement of weight given in 5.2, a single sampling plan with inspection level III and AQL 1 percent given in Tables 1 and 2 of IS 2500 (Part 1) shall be followed.

8 TESTS

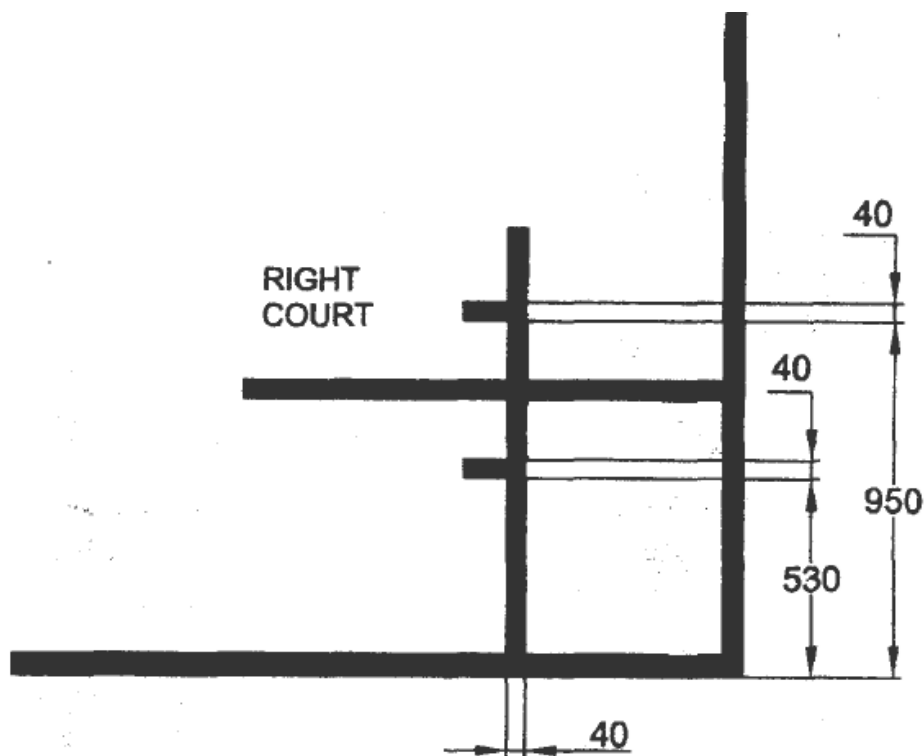
8.1 Pace and Flight

This test is applicable only for grade 1 shuttlecock. A shuttlecock shall be deemed to be of correct pace when it is hit by a player with a full underhand stroke from a spot immediately above one back boundary line in a direction parallel to the side lines and at an upward angle, to fall not less than 530 mm and not more than 990 mm short of the other back boundary line (*see* Fig. 3).

9 PACKING AND MARKING

9.1 Packing

The shuttlecocks shall be packed in suitable boxes made of cylindrical cardboard, PVC, or plastic and number of shuttlecocks shall be indicated on the box.



(All dimensions are in millimetres)

FIG. 3 TESTING MARKS FOR DOUBLE COURT

9.2 Marking

9.2.1 The shuttlecocks/container shall be marked with the following:

- Name of the material and grade of the shuttlecock;
- Net weight of the material and actual weight of the shuttlecock;
- Batch or lot number; and

- Month and year of manufacturing.

9.2.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations framed thereunder, and the product(s) may be marked with the standard mark.

ANNEX A
(Foreword)

COMMITTEE COMPOSITION

Sports Goods Sectional Committee, PGD 41

<i>Organization</i>	<i>Representative(s)</i>
Sports Goods Export Promotion Council	SHRI TARUN DEWAN (Chairman)
All India Lawn Tennis Association, New Delhi	SHRI NAR SINGH
Anand and Anand	SHRI ASHISH ANAND
Athletic Federation of India	SHRI SANDEEP MEHTA SHRI GOPALA KRISHNAN (<i>Alternate</i>)
Central Institute of Plastics Engineering & Technology (CIPET), Murthal	DR S N YADAV
COSCO India Pvt Ltd, Gurgaon	SHRI PANKAJ JAIN SHRI NARINDER JAIN (<i>Alternate</i>)
Director Equipment, Sports Authority of India, New Delhi	SHRI ROQUE DIAS
Freewill Sports Pvt Ltd., Jalandhar	SHRI RAJESH KHARBANDA
Government e Market Place, New Delhi	SHRI N K MALHOTRA
Gymnastic Federation of India, Mumbai	SHRI RIAZ BHATI
Hockey India	COMMANDER R K SRIVASTAVA
Micro, Small and Medium Enterprises, Technology Development Centre, New Delhi	SHRI V K SINGH
NELCO (India) Pvt Ltd, Meerut	SHRI AMBER ANAND
Office of Development Commissioner (MSME), Delhi	SHRI SUNIL GUPTA
Premier Enterprises, Meerut	SHRI SUMESH AGARWAL SHRI KSHITIJ AGARWAL (<i>Alternate</i>)
Process cum Product Development Centre, Meerut	SHRI SUNIL GUPTA
Ranson Sports Industry, Jalandhar	SHRI ARVIND SINGH RANA
Sanspareils Greenlands Pvt Ltd.	SHRI PUNEET ANAND SHRI ALOK MISHRA (<i>Alternate</i>)
Shriram Institute For Industrial Research, Delhi	DR VINAY TYAGI
Soccer International Pvt Ltd. Jalandhar	MS SHAALINI GUPTA
Softball Association of India	MS SHIBANI TAGORE

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<i>Organization</i>	<i>Representative(s)</i>
Sports Goods Manufacturers and Exporters Association (SGMEA), Jalandhar	Ms HARSHITA
Sports Line, New Delhi	SHRI OJASVI NAGPAL
Stag International Sports, Meerut	SHRI RAKESH KOHLI SHRI VIVEK KOHLI (<i>Alternate</i>)
Universal Sports, Jalandhar	SHRI MAHESH CHADHA
Vats Sports, Meerut	SHRI LOKESH VATS
Voluntary Organisation in Interest of Consumer Education (VOICE), New Delhi	SHRI M A U KHAN
Director General, BIS	SHRI R R SINGH, SCIENTIST 'E', DIRECTOR AND HEAD (PGD) [REPRESENTING DIRECTOR GENERAL (<i>Ex-officio</i>)]

Member Secretary
SHRI AJAY KUMAR
ASSISTANT DIRECTOR AND SCIENTIST 'B' (PGD), BIS

Bureau of Indian Standards

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Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the website- www.bis.gov.in or www.standardsbis.in.

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Amendments Issued Since Publication

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